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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,800	05/12/2006	Jiming Li	0815-053671	7396
28389 7590 12/02/2008 THE WEBB LAW FIRM, P.C. 700 KOPPERS BUILDING 436 SEVENTH AVENUE PITTSBURGH, PA 15219				
EXAMINER				
PATEL, VISHAL A				
ART UNIT		PAPER NUMBER		
3676				
MAIL DATE		DELIVERY MODE		
12/02/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/560,800

Applicant(s)

LI ET AL.

Examiner

Vishal Patel

Art Unit

3676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1.5 and 6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1.5 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-893)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/13/08 has been entered.

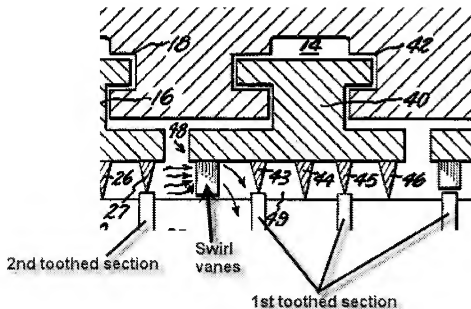
Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (US. 4,420,161) in view of Burnett et al (US. 6,679,681).

Miller discloses an apparatus having a labyrinth seal having a seal section (section having 43-46) on a stator and swirl vanes (e.g. 37 shown below) on the stator, a shaft (e.g. 10) comprising a first toothed section and a second toothed section, a cylindrical surface (surface between 32 and 50, 32 is part of the second toothed section and 50 is part of the first toothed section) of a diameter less than the outer edge of the teeth of the toothed sections and the seal section having teeth (43-46).



Miller discloses the invention as claimed above but fails to disclose that the apparatus having an abradable labyrinth seal having an abradable coating on the stator. Burnett discloses a labyrinth seal (figure 9) having toothed sections (e.g. toothed section having 652 and toothed section having 644) on two members that are relatively rotating (figures 9) and at the same time in another embodiment provides a labyrinth seal (figure 8) having toothed section (section having 548) on a member (e.g. 510) and an abradable seal having an abradable coating (e.g. 550) on another member (e.g. 526). It would have been obvious to one having ordinary skilled in the art at the time of the invention to have the seal section of Miller to have an abradable coating instead of teeth as taught by Burnett, to provide seal with reduce solid particle erosion (column 4, lines 52-53 of Burnett) and having toothed section or an abradable is art equivalent.

4. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller and Burnett and further in view of Jude (US. 881,474).

Miller and Burnett disclose the invention substantially as claimed above but fail to disclose that the vanes having a generally V-shape with a generally V-shape slot therebetween, the apex of the slot being circumferentially pointed in the direction of shaft rotation whereby the axial gas flow swirling in the rotational direction of the shaft enters the slots and is redirected to exit swirling in the direction against the rotation of the shaft, the vanes having an arcuate shape and the top of the arc is pointed in the direction of the rotation of the shaft and the vanes have a tapered ends. Jude discloses to have vanes that have a generally V-shape with a generally V-shape slot therebetween, the apex of the slot being circumferentially pointed in the direction of shaft rotation whereby the axial gas flow swirling in the rotational direction of the shaft enters the slots and is redirected to exit swirling in the direction against the rotation of the shaft, the vanes having an arcuate shape and the top of the arc is pointed in the direction of the rotation of the shaft and the vanes have a tapered ends (figures 1-4, e.g. vanes a or a' or b or b'). It would have been obvious to one having ordinary skill in the art at the time of the invention to have the swirl vanes of Miller and Burnett to have V-shape and as oriented as shaft rotation, to provide more efficient sealing apparatus with low loss of working fluid (page 1, lines 89-94 of Jude).

Response to Arguments

5. Applicant's arguments filed 8/18/08 have been fully considered but they are not persuasive.

Applicants' argument that the lands 50, 52 or etc are not teeth is not persuasive because the lands project from the shaft outer surface, hence they are teeth.

Applicants' argument that Burnett would suggest placing the teeth 24-26 of miller on the end of blade 38 of miller is not persuasive because the reference of Burnett is used to replace the teeth of Miller (e.g. 43-46) by the abradable material.

Applicants' argument regarding the V-shaped vanes is not persuasive because the reference of Jude teaches the structural limitations of the V-shape vanes.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is 571-272-7060. The examiner can normally be reached on 6:30am to 8:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer H. Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/V. P./
Primary Examiner, Art Unit 3676

/Vishal Patel/
Primary Examiner, Art Unit 3676